

SECTION 11600 - LABORATORY EQUIPMENT - GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes, but is not limited to, all materials, labor and equipment, complete with all anchors and related accessories, necessary to furnish, deliver and install:
 - 1. Section 11650 - Miscellaneous Laboratory Equipment: DI Water Polishers, Glassware Washers (Flask Scrubbers) and Water Distillers
 - 2. Section 11680 - Headwalls - Patient Beds, Bed Docking Locations, Horizontal Headwalls and SimMan Patient Beds
- B. Although such work is not specifically shown or specified, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
- C. This Section also includes all general requirements, applicable to this and all other Equipment Specification Sections including, but not limited to:
 - Definitions
 - System description
 - Scope
 - Submittals
 - Quality assurance
 - Mock-up
 - Testing
 - Field measurements
 - Pre-installation conference
 - Delivery, storage and handling
 - Project conditions
 - Sequencing
 - Materials
 - Components
 - Finish and performance requirements
 - Examination, Installation, Adjusting, Cleaning and Protection Requirements
- D. Related Sections:
 - 1. Section 12309 - Laboratory Service Fixtures
 - 2. Section 12345 - Metal Laboratory Casework and Hoods: Chemical Fume Hoods, Biosafety Cabinets, Acid Storage Cabinets, Solvent Storage Cabinets and Vacuum Pump Cabinets
 - 3. Section 12346 - Wood Laboratory Casework
 - 4. Division 15 - Mechanical: Mechanical Connections
 - 5. Division 16 - Electrical: Electrical Connections
- E. Quality Assurance
 - 1. Single Source Responsibility:

- a. Furnish products for each type of equipment from one manufacturer for entire Project, unless otherwise acceptable to Architect.
 - b. Provide each product as complete unit, including accessory items necessary for proper operation.
2. Manufacturer Qualifications: Company specializing in manufacturing Products specified in this Section.
3. Installer Qualifications: Manufacturer, or approved in writing by manufacturer.

1.02 SUBMITTALS

A. Shop drawings:

1. Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
2. Indicate typical layout including dimensions, locations, large-scale plans, elevations, cross sections, rough-in and anchor placement dimensions and tolerances, and clearances required.
3. Submit detail drawings of special accessory components not included in manufacturer's product data.
4. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

B. Product Data:

1. Submit manufacturer's descriptive literature and product specifications for each product.
2. Include data to indicate equipment dimensions and construction, equipment capacities, and point loads.
3. Include information for factory finishes, hardware, glass, sealants, accessories and other required components.
4. Include wiring diagrams and rough-in requirements.

C. Samples:

1. Finishes. Include color charts for finish indicating manufacturer's full range of colors available for selection.

D. Qualification Data:

1. Submit manufacturer's and installer's qualifications verifying experience.
2. Include list of completed projects having similar scope of Work identified by name, location, date, reference names, and phone numbers.

E. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

F. Operation and Maintenance Data:

1. Submit manufacturer's printed, recommended operation and maintenance data.
2. Include description of equipment operations, adjusting, and testing.
3. Identify system maintenance requirements, servicing cycles, and spare part sources.

- G. Warranty: Submit specified warranty in accordance with Division 1.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Manufacturer is responsible for designing units, including anchorage of units to structural system and necessary modifications to meet specified requirements and maintain visual design concepts.
2. Dimensions, voltages, electrical power requirements, and utility connections are based on the items specified. Contractor is responsible for all costs for dimensional adjustments and for providing or arranging for additional electrical or utility services or equipment required as a result of using an equal product.
3. Provide concealed fastening wherever possible.
4. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between utility connections and units.
5. Equipment may be inspected by Owner at manufacturer's plant prior to shipment. Equipment found not in accord with specifications and approved Drawings may be rejected. Replace rejected equipment at no cost to Owner.
6. Electric operated and/or heated equipment: Comply with latest standards of National Electrical Manufacturer's Association (NEMA), National Electric Code (NEC) and Underwriters' Laboratories, Inc., (UL).

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Contractor furnished, Contractor installed equipment (C/C):

1. Contractor shall be responsible for furnishing and installing equipment.
2. Contractor to deliver to site in manufacturer's original labeled containers, and to store equipment to prevent damage to materials or structure in dry, weather tight, ventilated spaces, protect exposed surfaces and edges until work is completed, and repair or remove and replace damaged or rejected work.

B. Owner furnished, Contractor installed equipment (O/C):

1. New Equipment:
 - a. Owner will be responsible for shipping these items to project site.
 - b. Contractor shall be responsible for unloading, handling, storing, unpacking, assembling, installing and connecting equipment, and removing debris.
 - c. Contractor to store equipment to prevent damage to materials or structure in dry, weather tight, ventilated spaces, and to protect exposed surfaces and edges until work is completed.
2. Existing Equipment:
 - a. Owner will disconnect, move, and place equipment in proximity of new location.
 - b. Contractor shall be responsible for moving equipment to final location, unpacking, assembling, installing, and connecting equipment, and removing debris.
 - c. Contractor to store equipment to prevent damage to materials or structure in dry, weathertight, ventilated spaces, and to protect exposed surfaces and edges until work is completed.

3. Owner furnished, Owner installed (O/O):
 - a. Future equipment and "NIC" equipment (Not in Contract under Base Bid)
 - b. Contractor to provide all structural, mechanical and electrical rough-in indicated.

1.05 JOB CONDITIONS

- A. Drawings show arrangement and location of items of equipment. If it is necessary to vary from arrangement shown, because of structural, mechanical, electrical or other considerations, make such variations only after approval of Architect and at no additional expense to Owner.
- B. Verify all dimensions at building.
- C. Measure all recesses and openings at buildings and provide all trim pieces, fillers, and closures, in sizes required.

1.06 PRE-INSTALLATION CONFERENCE

- A. Conduct pre-installation conference in accordance with Division 1.
- B. Convene pre-installation conference one week prior to commencing work of this Section.
- C. Attendance Required: Owner, Architect, Contractor, Manufacturer's Representative, and Installer.
- D. Agenda: Discuss and agree upon acceptable substrate and support conditions, preparatory work, interface with mechanical and electrical services, and methods of installation and testing.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Acceptable manufacturers:
 1. Laboratory equipment: As noted for individual items. Layouts, dimensions, voltages, electrical power requirements, and utilities connections are based on the items specified.
 2. The Naming of manufacturer(s) and designation of product is for the purpose of identifying and describing required product and not to limit competition. Other manufacturers capable of producing the same appearance and having the same quality, durability, and performance may be proposed for use on this project subject to Architect's approval, unless noted otherwise.
 3. Other approved manufacturers are responsible for all adjustments required to fit their products to the work at no additional cost.
 4. Provide equipment of each specialty type (as designated by Sections referenced) by one manufacturer, insofar as is possible, and except as otherwise indicated.

2.02 EQUIPMENT SCHEDULE

- A. Refer to Equipment Schedule bound at the end of this Section.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions and proceed with work in accordance with specifications.
- B. Verify that utility connections are in place and correctly positioned.
- C. Verify that rough-in frames, anchors, and supports are accurately placed.
- D. Correct unsatisfactory conditions.
- E. Start of work constitutes acceptance of responsibility for performance.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's printed instructions and approved shop drawings.
- B. Follow manufacturer's printed instructions or drawings in all cases where items or details are not indicated.
- C. Except for final connection, installation of each item shall be complete in every respect.
 - 1. Provide all controls, regulating devices and all other accessories necessary for proper operation and maintenance of equipment including, but not necessarily limited to, pressure reducing valves, strainers, steam traps, control valves, relief valves, etc.
 - 2. Include all accessories whether or not they are specifically indicated.
- D. Where an item of equipment is furnished without a cord and plug, electrical wiring in or on equipment shall be brought to an equipment junction box located on, and as a part of equipment, such that a flexible connection no longer than 3 ft. will be needed to make a final connection between item and rough-in junction box.
- E. Provide all stands, supports, sleeves, collars, escutcheons, brackets, braces or other miscellaneous items required for a complete installation.
- F. Install equipment plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction and adjacent surfaces.
- G. Repair or replace damaged, stained or rejected work.
- H. Test and adjust all items of equipment for satisfactory operation.
- I. Interface With Other Work: Coordinate equipment installation with size, location, and installation of service utilities.
- J. Sequences of Operation: Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

3.03 CLEANING

- A. Remove protective coverings from pre-finished units.
- B. Clean as required by manufacturer. Do not use materials or methods, which may damage finish or surrounding construction.

- C. Touch-up minor damaged surfaces caused during installation; replace damaged components as directed by Architect.

3.04 PROTECTION

- A. Protect finished work.

3.05 OWNER INSTRUCTION

- A. Perform instruction of Owner personnel: See Division 1.

END OF SECTION 11600

Equipment List - Sorted by number

Rappahannock Community College
Glenns / Warsaw, VA
Glenns & Warsaw Campus Renovations

Equip. No.	Description	Spec. No.	Furnish / Install	New / Exist	Mounted	Size	Manuf.	Model No.	Remarks
EQ-01	Fume Hood - 6'	12345	C/C	N	F	72"Lx36"Wx84"H	Kewaunee		
EQ-02	ADA Fume Hood - 6'	12345	C/C	N	F	72"Lx36"Wx84"H	Kewaunee		
EQ-03	Future Fume Hood - 6'	12345	C/C	N	F	72"Lx36"Wx84"H	Kewaunee		Future. Capped services at ceiling
EQ-04	BioSafety Cabinet	12345	C/C	N	F	78"Lx33"Wx95"H	NuAire	NU-425-600	
EQ-05	DI Water Polisher	11650	C/C	N	WL	10"Lx12"Wx18"H	Millipore	Direct Q	with 10 L Reservoir Tank
EQ-06	Refrigerator	NIC	O/O	E	F	36"Lx34"Wx70"H	Galaxy	55622	with Ice Maker
EQ-07	Refrigerator	NIC	O/O	N	F	36"Lx34"Wx70"H	Microsystems Kenmore	59962	with Ice Maker
EQ-08	Digital Incubator	NIC	O/O	N	F	19"Lx13"Wx21"H	Carolina Biological Supply Company	12-140E	Catalogue # NP-70-1294 (NOT LOCATED)
EQ-09	Autoclave	NIC	O/O	E	B	20"Lx22"Wx15"H	Tuttnauer	2340M	Chamber Size: 9" x 18" (NOT LOCATED)
EQ-10	Water Bath	NIC	O/O	E	B	24"Lx14"Wx10"H	Precision	185	(NOT LOCATED)
EQ-11	Glassware Washer (Flask Scrubber)	11650	C/C	N	F	24"Lx24"Wx34"H	Labconco	4420330	Undercounter
EQ-12	Goggle Cabinet	12345	C/C	N	WL	25"Lx10"Wx32"H	Kewaunee	F-5334-00	
EQ-13	Aquarium	NIC	O/O	E	B				(NOT LOCATED)
EQ-14	Balance	NIC	O/O	E	B		Ohaus	Scout Pro 200g	(NOT LOCATED)
EQ-15	Analytical Balance	NIC	O/O	E	B				(NOT LOCATED)
EQ-16	Triple Beam Balance	NIC	O/O	E	B				(NOT LOCATED)
EQ-17	Oven	NIC	O/O	E	B		Despatch	LEB 1-23	FYI only. RCC to review (NOT LOCATED)
EQ-18	Centrifuge	NIC	O/O	E	B				(NOT LOCATED)
EQ-19	Spectronic-20	NIC	O/O	E	B		Thermo Scientific	Spectronic 20D+	FYI only. RCC to review (NOT LOCATED)
EQ-20	Hot Plate	NIC	O/O	E	B				(NOT LOCATED)
EQ-21	Smart AV / IT Station	NIC	O/O	N	F				
EQ-22	Patient Bed	11680	C/C	N	F	92"Lx42"Wx30"H	Hill-Rom	Resident LTC Bed	Adjustable Height
EQ-23	Bed Docking Location	11680	C/C	N	WL	5"Lx50"Wx32"H	Hill-Rom	Bed Locator P0052B1	Connected to simulated services
EQ-24	Horizontal Headwall (Active)	11680	C/C	N	WL	8 ft Wx14"H	Hill-Rom	UniFlex 1000	No service connections
EQ-25	Horizontal Headwall	11680	C/C	N	WL	8 ft Wx14"H	Hill-Rom	UniFlex 1000	

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Equip. No.	Description	Spec. No.	Furnish / Install	New / Exist	Mounted	Size	Manuf.	Model No.	Remarks
EQ-26	SimMan	NIC	O/O	N					(NOT LOCATED)
EQ-27	Bed Side Movable Cabinet	NIC	O/O	E	F				(NOT LOCATED)
EQ-28	Mobile Supplies Cabinet	NIC	O/O	E	F				(NOT LOCATED)
EQ-29	Over-the-Bed Table	NIC	O/O	E	F				
EQ-30	Biological Microscope	NIC	O/O	E	B		Motic	BA300	FYI only. RCC to review (NOT LOCATED)
EQ-31	Air Tracks	NIC	O/O	E	B				(NOT LOCATED)
EQ-32	Water Distiller	11650	C/C	N	WL	12"Lx15"Wx30"H	Barnstead	FI Stream 2S Glass Still	4 lt. capacity, with A1052 (8 lt. storage bottle)
EQ-33	Stationary Cylinder Holder	12340	C/C	N	WL	26"Lx13"Wx29"H	Harper	301	
EQ-34	SimMan Patient Bed	11680	C/C	N	F	94"Lx40"Wx44"H	Hill-Rom	TotalCare Bed System	Adjustable Height

NIC Not In Contract
N New Equipment
E Existing Equipment
B Bench Top Equipment
F Floor Mounted Equipment
WL Wall Mounted Equipment
S Suspended Equipment
C Ceiling Mounted Equipment
L Length
W Width
H Height
O/O Owner Furnished / Owner Installed
C/C Contractor Furnished / Contractor Installed
BSC Biosafety Cabinet
ADA Americans with Disabilities Act